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Petrographic rhythmicality of hypabyssal complexes of the basement of the tatar arch – potential reservoir zones

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Abstract

© SGEM2018. The crystalline basement of the Tatar arch is composed of metamorphic rocks. Locally, areas within its boundaries are composed of magmatic rocks. According to the data of our studies, it is known that within the basement permeable zones are developed, which we attribute to unconventional types of reservoirs. One such object is the hypabyssal rocks, which are alternated by rocks of the gabbro-diabase formation. Based on the results of studying geological-geophysical and core materials of individual areas, in particular, the Pervomaysky area, it was established that such zones are associated with the hypabyssal rocks of gabbro-diabase formation. They were penetrated by a number of wells, including a deep well 279. Areas with high permeability were identified as belonging to unconventional reservoirs, the formation of which is associated with later tectonic processes of rocks formation. The investigated hypabyssal rocks in form of occurrence in the enclosing rocks can be referred to as a “sill-like” type, the lower boundary of which was not penetrated in well 279 of Pervomaysky area. For the rocks studied, the specific form of a void space with active processes of migration of deep fluids is characteristic. By the nature of the permeable zones, it is possible to identify the main types for the hypabyssal rocks of the region: fractured, porous-fractured, opened and healed forms by the complex of finely dispersed minerals. The obtained results show that reservoir zones can serve as migration routes of hydrocarbon-containing fluids of deep genesis, study of which should be of great attention in the light of “replenishment” of modern oil fields.

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Keywords

Basement, Hypabyssal complexes, Reservoir zones, Tatar arch

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